

WE CLAIM:

1 1. (original) An enhanced T-gate comprising:

2 a free T-gate, said free T-gate having a neck portion, said neck portion having a
3 height, and a T-bar portion, said T-bar portion having overhangs extending beyond said
4 neck portion by a first width; and

5 an insulator layer disposed on each side of said neck portion, forming a
6 sandwich structure with said neck portion along a width direction of said free T-gate, and
7 wherein said insulator layer only partially filling up a volume defined therebetween said
8 overhangs and a surface on which said free T-gate is standing.

1 2. (original) The enhanced T-gate of claim 1, wherein in said sandwich structure said
2 insulator layer creating spacers on each side of said neck portion, wherein said spacers
3 having a second width, said second width being less than said first width of said
4 overhangs, whereby that part of said volume which is further from said neck portion than
5 said second width is not filled with said insulators.

1 3. (original) The enhanced T-gate of claim 1, wherein in said sandwich structure said
2 insulator layer having approximately a C-shape, conformally adhering to a bottom
3 surface of said overhangs, to said neck portion, and to said surface on which said free
4 T-gate is standing, said insulator layer having a thickness which is less than half of said
5 height of said neck portion, wherein said insulator layer covering said surface on which
6 said free T-gate is standing and said bottom surface of said overhang to a distance from
7 said neck portion substantially equal to said first width, whereby that part of said volume
8 which is inside said C-shape is not filled by said insulator.

1 4. (original) The enhanced T-gate of claim 1, wherein said insulator layer is a low-k
2 material.

1 5. (original) The enhanced T-gate of claim 4, wherein said low-k material is a compound
2 of materials selected from the group consisting of SiCO, SiCOH, SiCH, these silicon
3 containing materials with Si up to 100% replaced by Ge and these silicon containing
4 materials further containing atoms of materials selected from the group consisting of N
5 and F.

1 6. (original) The enhanced T-gate of claim 4, wherein said low-k material is selected
2 from the group consisting of diamond-like carbon, fluorinated amorphous carbon,
3 insulating inorganic oxides, inorganic polymers, organic polymers, photosensitive
4 organic materials, fluorinated organic materials, other carbon-containing materials,
5 hybrid organo-inorganic materials and silsesquioxane-based materials.

1 7. (original) A MODFET device comprising an enhanced T-gate, said enhanced T-gate
2 further comprising:

3 a free T-gate, said free T-gate having a neck portion and a T-bar portion, said T-
4 bar portion having overhangs extending beyond said neck portion; and

5 an insulator layer disposed on each side of said neck portion, forming a
6 sandwich structure with said neck portion along a width direction of said free T-gate, and
7 wherein said insulator layer only partially filling up a volume defined therebetween said
8 overhangs and a surface on which said free T-gate is standing.

1 8. (original) The MODFET device of claim 7, further comprising a self-aligned
2 source/drain metallurgy, wherein a borderline of said metallurgy is defined by said
3 insulator layer.

1 9. (original) An integrated circuit comprising at least one MODFET device, said
2 MODFET device comprising an enhanced T-gate, wherein said enhanced T-gate
3 further comprising:

1 a free T-gate, said free T-gate having a neck portion and a T-bar portion, said T-
2 bar portion having overhangs extending beyond said neck portion; and
3 an insulator layer disposed on each side of said neck portion, forming a
4 sandwich structure with said neck portion along a width direction of said free T-gate, and
5 wherein said insulator layer only partially filling up a volume defined therebetween said
6 overhangs and a surface on which said free T-gate is standing.

1 10. (original) The integrated circuit of claim 9, wherein said at least one MODFET further
2 comprising a self-aligned source/drain metallurgy, wherein a borderline of said
3 metallurgy is defined by said insulator layer.

1 11. (original) The integrated circuit of claim 9, further comprising a multilevel
2 interconnect structure of low-k interconnect dielectrics.

1 12. (original) The integrated circuit of claim 11, wherein said low-k interconnect
2 dielectrics leaving voids in said volume only partially filled up by said insulator layer.

1 13. (original) The integrated circuit of claim 11, wherein said low-k interconnect
2 dielectrics are materials selected from the group consisting of SiCO, SiCOH, SiCH,
3 these silicon containing materials with Si up to 100% replaced by Ge, diamond-like
4 carbon, fluorinated amorphous carbon, insulating inorganic oxides, inorganic polymers
5 and organic polymers.

14. - 30. (canceled)